CRITICAL HABITAT AREAS OF ARKDALE LAKE, ADAMS COUNTY, WISCONSIN

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CRITICAL HABITAT DESIGNATION
For Arkdale Lake, Adams County 2006

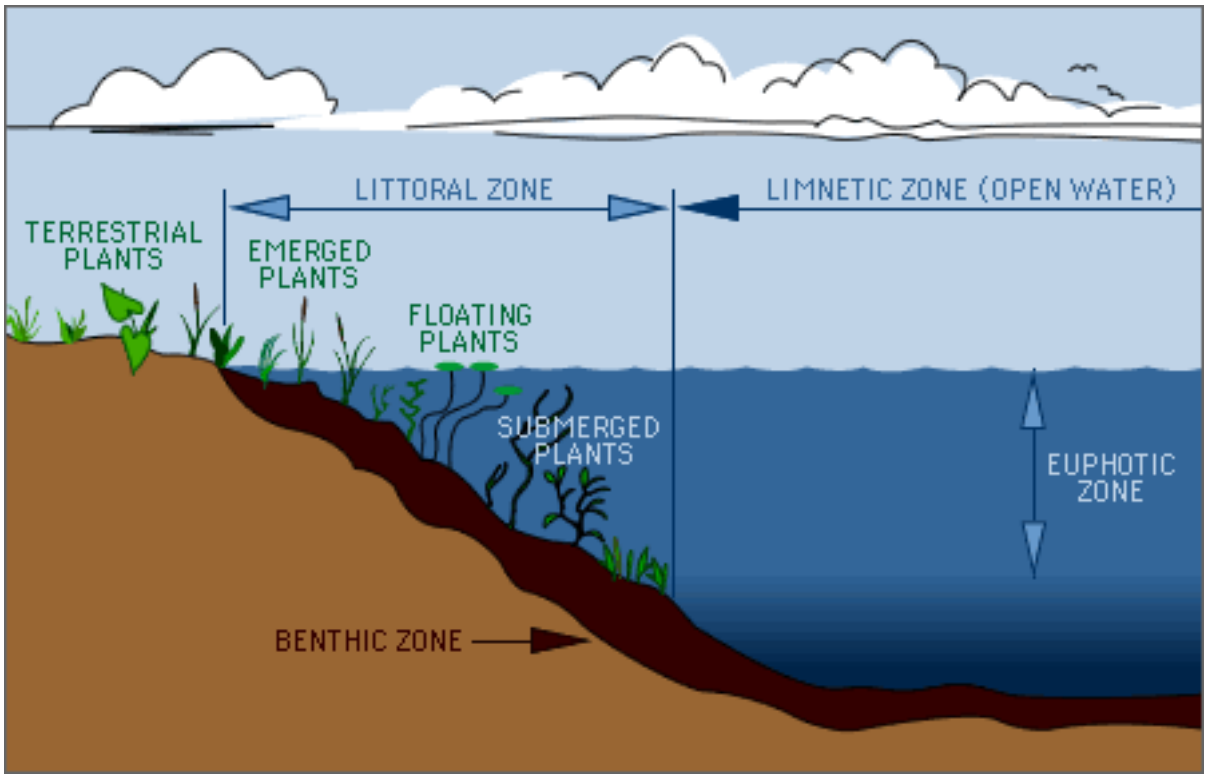
INTRODUCTION

Designation of critical habitat areas within lakes provides a holistic approach for assessing the ecosystem and for protecting those areas in and near a lake that are important for preserving the qualities of the lake. Wisconsin Rule 107.05(3)(i)(I) defines a "sensitive areas" as: "areas of aquatic vegetation identified by the department as offering critical or unique fish & wildlife habitat or offering water quality or erosion control benefits to the body of water. Thus, these sites are essential to support the wildlife and fish communities. They also provide mechanisms for protecting water quality within the lake, often containing high-quality plant beds. Finally, sensitive areas often can provide the peace, serenity and beauty that draw many people to lakes in the first place.

Protection of critical habitat areas must include protecting the shore area plant community, often by buffers of native vegetation that absorb or filter nutrient & stormwater runoff, prevent shore erosion, maintain water temperature and provide important native habitat. Buffers can serve not only as habitats themselves, but may also provide corridors for species moving along the shore.

Besides protecting the landward shore areas, preserving the littoral (shallow) zone and its plant communities not only provides essential habitat for fish, wildlife, and the invertebrates that feed on them, but also provides further erosion protection and water quality protection.

Critical habitat area designations provide information that can be used in developing a management plan for the lake that protects the lake's ecosystem by identifying areas in need of special protection. These areas usually contain several types of aquatic plants: emergent; free-floating; rooted floating-leaf; and submergent.



Field work for a critical habitat area study was performed on May 31, 2006, on Arkdale Lake, Adams County. The study team included: Scot Ironside, DNR Fish Biologist; Deborah Konkel, DNR Aquatic Plant Specialist; Buzz Sorge, DNR Lake Manager; and Reesa Evans, Adams County Land & Water Conservation Department. Areas were identified visually, with GPS readings and digital photos providing additional information. Input was also gained from Terence Kafka, DNR Water Regulation, and James Keir, DNR Wildlife Biologist.

Arkdale Lake is a mesotrophic impoundment with fair to good water quality and fair water clarity. It has 56 surface acres, with a maximum depth of 8 feet and an average depth of less than 5 feet. A dam owned by the Arkdale Lake Association controls the water level in the lake. The lake has a history of dense aquatic vegetation throughout the lake and increasingly shallow depths. There are two public boat ramps, one on the south side of the lake and one on the north side of the lake.

CRITICAL HABITAT AREA CRITERIA

The critical habitat areas designated on Arkdale Lake were selected because of their importance for fish and wildlife habitat, importance for protecting water quality, importance of the natural buffer of terrestrial vegetation, and importance of protecting the aquatic plant communities they supported. The sites need to be preserved in their current natural state and should not be further developed.

Common Attributes of All the Critical Habitat Areas

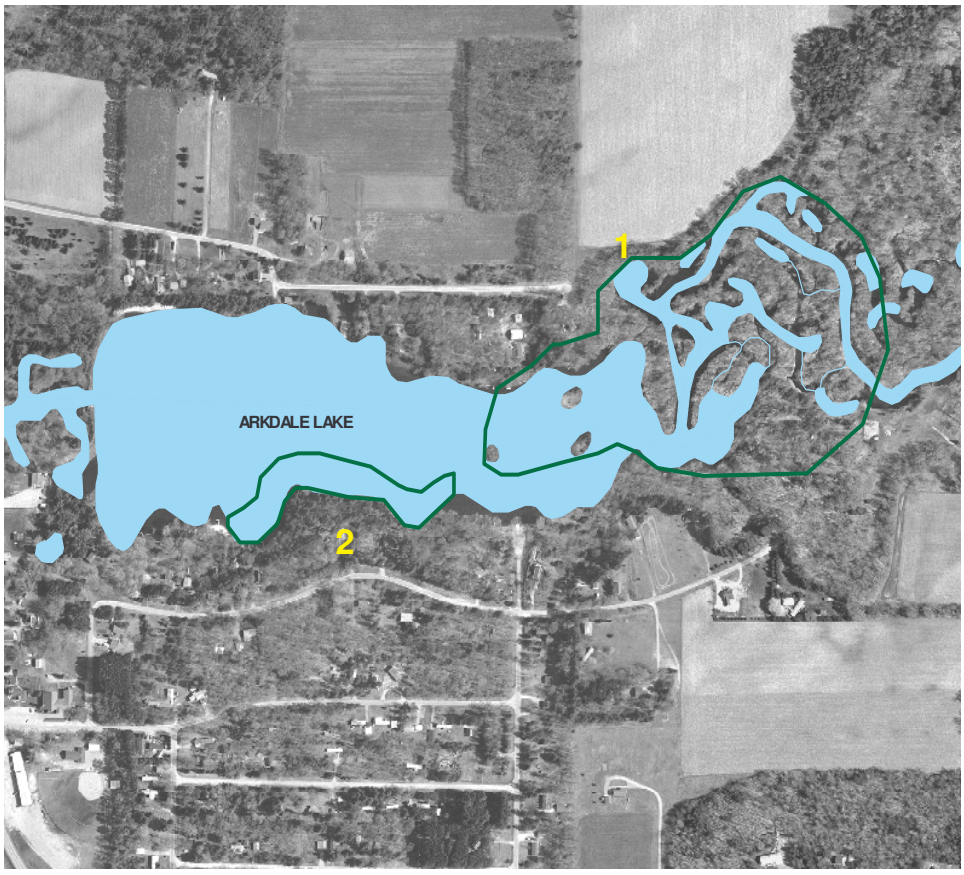
Water Quality: The vegetation at critical habitat sites (near shore and in the water) provide a nutrient buffer that reduces algal growth. Its service as a biological buffer reduces the opportunities for invasions by exotics. The physical buffer the vegetation gives protects against shore erosion and plant fragmentation, as well as stabilizes sediment, thus reducing nutrient recycling and likelihood of algal blooms. Many of these plant areas also provide microhabitat for fish and wildlife, as well as providing conditions that encourage higher biodiversity at the site.

Fish Habitat: Critical habitat areas provide important fish habitat and are the most essential areas in the lake for a healthy fish community. These areas provide space for spawning, nursery sites, feeding sites, and protective cover from predator fish. Eliminating even one of these sites would reduce the amount of fish habitat available, resulting in a reduction of the size and diversity of the fish community that Arkdale Lake can support.

Wildlife Habitat: Shoreline, emergent and floating-leaf vegetation are primary habitat for many kinds of wildlife. Shore and emergent vegetation are especially important as nesting and brood-rearing areas. This vegetation also provides cover during migrations and provides travel corridors all throughout the year. Floating-leaf vegetation also provides cover. Most of this vegetation is also used by various fish and other wildlife for food.

A map of the designated critical habitat areas on Arkdale Lake is seen on the next page.

Critical Habitat Areas–Arkdale Lake



RE:6/06

Critical Habitat Area AR1

This area extends along the entire northeast end of the lake and the eastern end of the north shore, with an average water depth of less than 2' in the most eastern end and of less than 3' along the north shore. Sediment includes muck, silt and mixtures thereof. 25% of the shore is wooded; 55% is native herbaceous cover and 20% is shrubs. Some woody cover is present for habitat. Human disturbance impact on this area is currently limited, perhaps partially due to the very shallow waters.

North Shore of AR1

Fishery in this area includes largemouth bass, bullheads and several types of panfish, including bluegills, pumpkinseed and crappie. Rusty crayfish were present in great numbers during the field review in May 2006. Geese and songbirds are known at this site, as are amphibians and reptiles.

Aquatic vegetation found at AR1 includes emergent plants such as *Carex* (Sedges); *Iris* (Blue-Flag Iris); *Sagittaria* (Arrowhead); *Scirpus* (Bulrush); *Sparganium* (Burreed); and *Typha* (Cattails). Emergents provide important fish habitat and spawning areas, as well as food and cover for wildlife

No floating-leaf vegetation was found at this site. *Lemna minor* (Small Duckweed) and *Wolffia columbiana* (Watermeal), two free-floating plants, were present. These are used for food and cover by various fish and wildlife. Filamentous algae were also abundant here.

Submergent aquatic vegetation in this area were *Ceratophyllum demersum* (Coontail), *Chara* spp (Muskgrass)), *Najas guadalupensis* (Southern Naiad); *Potamgeton crispus* (Curly-Leaf Pondweed), *Potamogeton zosteriformis* (Flat-Stem Pondweed) and *Vallisneria americana* (Water Celery). Most of these plants are used by a variety of fish and wildlife (see Table 1).

Table 1: Aquatic Plant Benefits

	Fish	Water Fowl	Shore Birds	Upland Birds	Muskrat	Beaver	Deer
Carex spp		F	F,I				
Chara	F,S	F,I,C					
Lemna & Wolffia	F,I,C,S	F	F		F	F	
Najas spp	F,C,I	F	F	F	F		
Potamogeton spp	F,I,C.S	F,I	F		F	F	F
Scirpus spp	F,C,I	F,C	F,C,N	F	F	F	F
Sparganium spp	F,I,C,S	F,C,N	F,C,N		F		F

F = Food; I = Shelters Invertebrates; C = Cover; S = Spawning; N = Nesting

This area of some woody cover, emergent aquatic vegetation, submergent and a little floating vegetation provides limited spawning and nursery areas for many types of fish: largemouth bass; bluegill; pumpkinseed; yellow perch; crappie; and other panfish. All of these fish also feed and take cover in these areas.

One aquatic exotic invasive plant was found in this area, Curly-Leaf Pondweed. *Myriophyllum spicatum*, Eurasian Watermilfoil, has been found in Arkdale Lake in the past years. None was found at Site AR1.

Various Parts of AR1

RECOMMENDATIONS FOR AREA AR1

(1) Maintain current habitat for fish and wildlife.
(2) Do not remove any fallen trees along the shoreline.
(3) No alteration of littoral zone unless to improve spawning habitat.
(4) Seasonal protection of spawning habitat.
(5) Maintain any snag/cavity trees for nesting.
(6) Install nest boxes.
(7) Maintain or increase wildlife corridor.
(8) Maintain no-wake lake designation.
(9) Protect emergent vegetation.
(10) Seasonal control of Curly-Leaf Pondweed and Eurasian Watermilfoil with methods selected for control of exotics.
(11) Develop & implement control plan for invasive Rusty Crayfish.
(12) Minimize aquatic plant and shore plant removal to maximum 30' wide viewing/access corridor and navigation purposes. Leave as much vegetation as possible to protect water quality and habitat.
(13) Use best management practices.
(14) No use of lawn products.
(15) No bank grading or grading of adjacent land.
(16) No pier placement, boat landings, development or other shoreline disturbance in the shore area of the wetland corridor.
(17) No pier construction or other activity except by permit using a case-by-case evaluation and only using light-penetrating materials.
(18) No installation of pea gravel or sand blankets.
(19) No bank restoration unless the erosion index scores moderate or high.
(20) If the erosion index does score moderate or high, bank restoration only using biologs or similar bioengineering, with no use of riprap or retaining walls.
(21) Placement of swimming rafts or other recreational floating devices only by permit.
(22) Maintain aquatic vegetation in undisturbed condition for wildlife habitat, fish use and water quality protection.
(23) Post exotic species information at public boat landing.

Critical Habitat Area AR2

This area extends along the 425' of the south shoreline with an average water depth of less than 5'. Sediment includes muck, silt and mixtures thereof. 40% of the shore is wooded; 23% is native herbaceous cover and 35% is shrubs. Some woody cover is present for habitat. This area is a small section of currently undeveloped shore, with development present on both sides of it. Human disturbance impact on this particular area is currently limited.

Sample Section of AR2

Fishery in this area includes largemouth bass, bullheads and several types of panfish, including bluegills, pumpkinseed and crappie. Rusty crayfish were present in great numbers during the field review in May 2006. Geese and songbirds are known at this site, as are amphibians and reptiles.

The only emergent aquatic vegetation found at AR2 was sedges (*Carex*). Emergents provide important fish habitat and spawning areas, as well as

food and cover for wildlife. Habitat here would be of higher quality if more emergent plants were present at this site.

Floating-leaf vegetation was found at this site, including *Nuphar variegata* (Yellow Pond Lily) and *Nymphaea odorata* (White Water Lily). Such plants provide cover and food for fish, invertebrates and wildlife. *Lemna minor* (Small Duckweed), *Spirodela polyrhiza* (Greater Duckweed) and *Wolffia columbiana* (Watermeal), three free-floating plants, were present. These are used for food and cover by various fish and wildlife. Filamentous algae were also abundant here.

Submergent aquatic vegetation in this area were *Ceratophyllum demersum* (Coontail), *Chara* spp (Muskgrass)), *Elodea canadensis* (Waterweed); *Najas flexilis* (Bushy Pondweed); *Potamogeton zosteriformis* (Flat-Stem Pondweed); and *Vallisneria americana* (Water Celery). Most of these plants are used by a variety of fish and wildlife (see Table 2).

Table 2: Aquatic Plant Benefits

	Fish	Water Fowl	Shore Birds	Upland Birds	Muskrat	Beaver	Deer
Carex spp		F	F,I				
Chara	F,S	F,I,C					
Lemna & Wolffia	F,I,C,S	F	F		F	F	
Najas spp	F,C,I	F	F	F	F		
Nuphar variegataa	F,I,C,S	F	F		F	F	F
Nymphaea odoratoa	F,I,C,S	F	F		F	F	
Potamogeton spp	F,I,C.S	F,I	F		F	F	F
Spirodela polyrhiza	F,I,C,S	F	F		F	F	
Vallisneria americana	F,I,C	F,I	F,I		F	F	F

F = Food; I = Shelters Invertebrates; C = Cover; S = Spawning; N = Nesting

RECOMMENDATIONS FOR AREA AR2

(1) Maintain current habitat for fish and wildlife.
(2) Do not remove any fallen trees along the shoreline.
(3) No alteration of littoral zone unless to improve spawning habitat.
(4) Seasonal protection of spawning habitat.
(5) Maintain any snag/cavity trees for nesting.
(6) Install nest boxes.
(7) Maintain or increase wildlife corridor.
(8) Maintain no-wake lake designation.
(9) Protect emergent vegetation.
(10) Seasonal control of Curly-Leaf Pondweed and Eurasian Watermilfoil with methods selective for control of exotics.
(11) Develop & implement control plan for invasive Rusty Crayfish.
(12) Minimize aquatic plant and shore plant removal to maximum 30' wide viewing/access corridor and navigation purposes. Leave as much vegetation as possible to protect water quality and habitat.
(13) Use best management practices.
(14) No use of lawn products.
(15) No bank grading or grading of adjacent land.
(16) No pier placement, boat landings, development or other shoreline disturbance in the shore area of the wetland corridor.
(17) No pier construction or other activity except by permit using a case-by-case evaluation and only using light-penetrating materials.
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(21) Placement of swimming rafts or other recreational floating devices only by permit.
(22) Maintain aquatic vegetation buffer in undisturbed condition for wildlife habitat, fish use and water quality protection.
(23) Post exotic species information at public boat landing.